

SAHIL H. INAMDAR

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SKILLS

Proficient In:

- Synthesis of Polymers, Micro/Nanoparticles
- Scanning Electron Microscopy
- Flow Cytometry
- ELISA
- Animal Handling, subcutaneous and intraperitoneal injections
- Design of Experiments
- UV-Vis Spectroscopy
- Mammalian Cell Culture

Experience with:

- Dynamic Light Scattering (DLS), MTT assay, Powder XRD, Fourier Transform Infrared Spectroscopy (FTIR), Radiation Chemistry, Western Blot, Clonogenic Assay, Ultramicrotome, Oxygen Plasma, Sputter Coating.

Statistical and Multivariate Analytical Software:

- MS Excel, JMP, ImageJ, FlowJo

WORK EXPERIENCE

Assistant Research Technologist

02/2018 to 12/2018

Rege Lab, SEMTE Department, Arizona State University, Tempe, AZ

Development of a colorimetric plasmonic nanosensor gel for the detection of ionizing radiation (X-rays, protons and electrons) at doses used in clinical radiotherapy. Radiation doses are quantitatively determined using the intensity of the gel color, rendered by the formation of gold nanoparticles. The plasmonic hydrogels successfully retained spatial dose profile and percent depth dose. The study demonstrated the translational potential of plasmonic gel nanosensors due to their ease of fabrication and simplicity of colorimetric detection. The gels were tested using anthropomorphic phantoms simulating a typical clinical radiotherapy treatment procedure. Also, studies on canine patients were carried out with in collaboration with Arizona Veterinary Oncology.

Collaborators

- Mayo Clinic Proton Therapy Center, Phoenix, AZ
- Banner MD Anderson Cancer Center, Gilbert, AZ
- Arizona Veterinary Oncology, Gilbert, AZ

EDUCATION

PhD in Chemical and Biochemical Engineering

01/2019 to Present

Arizona State University – Tempe, AZ

Succinate based Adjuvant-less Cancer Vaccine Modifies Immunometabolism and Prevent Melanoma Growth in Mice

Succinate-based polymers were synthesized and subsequently formed into polymeric-microparticle for efficient cellular delivery. Herein, an adjuvant-less vaccine strategy using succinate, a vital central-carbon metabolite in TCA cycle, that is able to activate DCs and subsequently upregulate antigen specific T cells (T_{C1} and T_{C17}) in melanoma (B16F10) mouse model.

Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition for Cancer Immunotherapy

A novel strategy to inhibit tumor growth by rescuing primary immune cells (dendritic cells-DCs) from systemic glycolytic inhibition (PFK15) by providing metabolite (Fructose_{1,6} biphosphate) based polymeric microparticles while simultaneously priming the adaptive immunity (T cells) against tumor cells.

Master of Science in Chemical and Biochemical Engineering

Arizona State University – Tempe, AZ

08/2015 to 12/2017

MS Thesis

Hydrogel Nanosensors for Colorimetric Detection and Dosimetry in Proton Beam Radiotherapy

A hydrogel based plasmonic nanosensor for the detection of proton beam therapy doses employed in clinical cancer radiotherapy.

Bachelor of Engineering in Chemical Engineering

Mumbai University- Mumbai, India

08/2011 to 05/2015

PATENT APPLICATIONS

- Metabolite-Based Polymers, Microparticles and Nanoparticles for Immunotherapy and Methods of Treating a Disease or Disorder (Filed on 1/8/2021)

PEER-REVIEWED JOURNAL PUBLICATIONS

- Pushpavanam, K., **Inamdar, S.**, Chang, J., Bista, T., Sapareto, S., & Rege, K. (2017). Detection of Therapeutic Levels of Ionizing Radiation Using Plasmonic Nanosensor Gels. *Advanced Functional Materials*, 27(21).
- **Inamdar, S.***, Nitiyanandan, R. *, & Rege, K. (2017). Emerging applications of exosomes in cancer therapeutics and diagnostics. *Bioengineering & Translational Medicine*, 2(1).
- **Inamdar, S.***, Pushpavanam, K. *, Lentz, J., Bues, M., Anand, A., and Rege, K. Hydrogel Nanosensors for Colorimetric Detection and Dosimetry in Proton Beam Radiotherapy. *ACS Applied Materials & Interfaces* **2018** 10 (4), 3274-3281. DOI: 10.1021/acsami.7b15127
- Pushpavanam, K., **Inamdar, S.**, Dutta S., Bista, T., Sokolowski, T., Boshoven, E., Sapareto, S. & Rege, K. Determination of topographical radiation dose profiles using gel nanosensors. *Science Advances* 2019 5 (11), eaaw8704. DOI:10.1126/sciadv.aaw8704
- Karthik Pushpavanam*, **Sahil Inamdar***, Subhadeep Dutta, Tomasz Bista, Thaddeus Sokolowski, Stephen Sapareto, Kaushal Rege. Plasmonic gel nanocomposites for detection of high energy electrons. *J. Mater. Chem. B*, 2020,8, 4930-4939.
- Dendritic Cell Responses to various Biomaterials. **Inamdar S.**, Acharya A. (Book Chapter in Handbook of Biomaterials Biocompatibility) 2020, Pages 53-68
- Mangal, J.L.*, **Inamdar, S.***, Yang, Y., Dutta, S., Wankhede, M., Shi, X., Gu, H., Green, M., Rege K., Curtis, M., Acharya, A.P. Metabolite releasing polymers control dendritic cell function by modulating their energy metabolism. *J. Mater. Chem. B*, 2020,8, 5195-5203
- Esrafil, A., Wagner, A., **Inamdar, S.**, Acharya, A.P. Covalent Organic Frameworks (COFs) for Biomedical Applications. *Advanced Healthcare Materials*
- **Inamdar, S.**, Mangal, J.L., Shi, X., Curtis, M., Gu, H., Acharya, A.P. Succinate based Adjuvant-less Cancer Vaccine Modifies Immunometabolism and Prevent Melanoma Growth in Mice. (Manuscript in Progress)
- **Inamdar, S.**, Mangal, J.L., Curtis, H., Acharya, A.P. Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition for Cancer Immunotherapy. (Manuscript in Progress)
- Mangal, J.L., **Inamdar, S.**, Shi, X., Curtis, M., Gu, H., Acharya, A.P. Inhibition of Glycolysis in the Presence of Self-Antigen Generates Suppressive Antigen-Specific Responses and Restrains Autoimmunity. (Manuscript in Progress)
- Handlos, J., Esrafil, A., Mangal, J.L., **Inamdar, S.**, Mcmillian, S., Wankhede, M., Gottardi, R.L., Acharya, A.P. Engineering metabolism of chimeric antigen receptor (CAR) cells for developing efficient immunotherapies. (Manuscript in Review - Cancers)

*Equal Contribution

CONFERENCE PRESENTATIONS

- A Colorimetric Nanosensor for Dosimetry of Therapeutic Levels of Ionizing Radiation (MCTB 2016)
- Colorimetric Detection of Therapeutic Levels of Ionizing Radiation using Plasmonic Nanoparticle Gels (AIChE 2016)
- Plasmonic Gel Based Nanosensor for Colorimetric Dose Response in Proton Beam Therapy (AIChE 2017)
- A Radio-Colorimetric Hydrogel for Detection of Therapeutic Levels of Ionizing Radiation Using Plasmonic Nanoparticles (AIChE 2017)
- Identification of Amino Acids for Templating Gold Nanoparticles Under Low Doses of Ionizing Radiation: From Discovery to Design (AIChE 2017)
- Mangal JL, **Inamdar S**, Ghosh D, Dutta S, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, *Statewide Symposium in Regenerative Medicine*, May 2019, Tempe, AZ, USA. Poster Presentation.
- **Inamdar S**, Mangal JL, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya A, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, *AIChE Annual Meeting*, November 2019, Orlando, FL, USA. Podium presentation.
- Mangal JL, **Inamdar S**, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya A, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, *Controlled Release Society*, June 2020, Las Vegas, NV. Podium presentation.
- Mangal JL, **Inamdar S**, Shi X, Curtis M, Gu H, Acharya A, Inhibition of Glycolysis in the Presence of Antigen Generates Antigen-Specific Treg Responses in Rheumatoid Arthritis, *Controlled Release Society*, June 2020, Las Vegas, NV. Poster presentation.

- **Inamdar S**, Mangal JL, Shi X, Curtis M, Gu H, Acharya A, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, *Controlled Release Society*, June 2020, Las Vegas, NV. Poster presentation.
- **Inamdar S**, Mangal JL, Curtis M, Acharya, Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition For Cancer Immunotherapy, *Controlled Release Society*, June 2020, Las Vegas, NV. Poster presentation.
- Mangal JL, **Inamdar S**, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, *Biomedical Engineering Society*, October 2020, virtual. Podium presentation.
- **Inamdar S**, Mangal JL, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, *Biomedical Engineering Society*, October 2020, virtual. Poster presentation.
- Mangal JL, **Inamdar S**, Shi X, Curtis M, Gu H, Acharya A, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, *ASU Society for Biomaterials Student Chapter: Rapid Fire Presentation Day*, November 2020, Tempe, Arizona. Podium presentation.
- Mangal JL, **Inamdar S**, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, *American Institute of Chemical Engineers*, November 2020, virtual. Podium presentation.
- **Inamdar S**, Mangal JL, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, *American Institute of Chemical Engineers*, November 2020, virtual. Podium presentation.
- **Inamdar S**, Mangal JL, Curtis M, Acharya AP, Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition For Cancer Immunotherapy, *American Institute of Chemical Engineers*, November 2020, virtual. Poster presentation.
- Mangal JL, **Inamdar S**, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya A, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, *World Biomaterials Congress*, December 2020, Glasgow, Scotland. Podium presentation.
- Mangal JL, **Inamdar S**, Shi X, Curtis M, Gu H, Acharya A, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, *World Biomaterials Congress*, December 2020, Glasgow, Scotland. Podium presentation.
- Acharya A, **Inamdar S**, Mangal JL, Metabolite-based Modulation of Dendritic Cells for Developing Effective Melanoma Immunotherapy, *World Biomaterials Congress*, December 2020, Glasgow, Scotland. Podium presentation.

ENTREPRENEURIAL EXPERIENCE

- **EnGyne – Co-Founder and Winner**, EDSON Student Entrepreneurship Initiative (Spring 2017)
- **Maternasense – Co-Founder (Chief Financial Officer) and Winner**, ASU Venture Devil Startup Competition (Spring 2017), EDSON Student Entrepreneurship Initiative (Fall 2017)
- **3DShieldX – Co-Founder** Participated in EDSON Student Entrepreneurship Initiative (Spring 2017)

MENTORING EXPERIENCE

- **MIO OZAWA** – Two-time FURI Undergraduate Scholarship Award winner at ASU. Bachelors in Chemical Engineering. Currently working at INTEL, AZ. **01/2019 to 05/2020**
- **BRENTLY MATSON** - Bachelors in Chemical Engineering. Currently working at INTEL, AZ. **08/2019 to 05/2020**
- **JAMIE HANDLOS** – Masters' in Chemical Engineering. Winner of MORE Graduate Scholarship Award at ASU. Currently working at INTEL, AZ. **08/2019 to 05/2020**
- **NATHAN NG** – Sophomore. Biomedical Engineering. **08/2020 to Current**
- **ALISON SUNDEM** – Sophomore. Chemical Engineering. Winner of FURI Undergraduate Scholarship Award winner at ASU for Spring 2021. **08/2020 to Current**
- **PAIGE ARRIAGA** – Sophomore. Microbiology. **08/2020 to Current**